

DEPARTMENT OF ENERGY  
FY 2002 CONGRESSIONAL REVIEW BUDGET REQUEST

FOSSIL ENERGY RESEARCH AND DEVELOPMENT

SUMMARY OF CHANGES

	FY 2002 <u>Request</u>
FY 2001 Enacted .....	\$438,463
Non-Discretionary .....	
- Federal Pay Raise and Locality Pay .....	2,293
- Transit Subsidy .....	8
- Working Capital Fund .....	<u>58</u>
FY 2002 Base .....	\$440,822

**Clean Coal Power Initiative**

- This is a new Presidential initiative that will demonstrate the latest advanced clean coal-based technologies , aimed at sustaining enhanced electricity reliability, generation capacity and clean, affordable power .....	+150,000
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**Central Systems**

- Innovations for Exiting Plants - Funding will support development of fossil fuel combustors with ultra clean NO <sub>x</sub> emissions under the Vision 21 program and eliminates a program aimed at optimizing the performance of coal-fired power plants in China and Turkey .....	-2,102
- Advanced Systems-Low Emission Boiler System (LEBS) - Phase IV activity will continue using prior year funding .....	0
- Advanced Systems-Indirect Fired Cycle - Funding for the applicable combustion technology for Vision 21 is funded within Advanced Systems-Integrated Gasification Combined Cycle. ....	-5,997

## SUMMARY OF CHANGES - FOSSIL ENERGY RESEARCH AND DEVELOPMENT (Cont'd)

- Advanced Systems-Integrated Gasification Combined Cycle - The funding level supports the continuation of development efforts at the Wilsonville Power Systems Development Facility; co-production feasibility studies; laboratory-scale investigations of Vision 21 activities in air separations; hydrogen separations; gas stream purification and advanced fuel-flexible gasification hybrids .....	-134
- Advanced Systems-Pressurized Fluidized Bed - The decrease will transition the program to combustion hybrid technology development activities at the Wilsonville Power Systems Development Facility, gas stream cleanup development and testing, and continue engineering design concepts in support of Vision 21 .....	-4,175
- Turbines - As work on the utility-scale turbine draws to a close, no additional funding is requested in FY 2002 .....	-30,936
- Power Plant Improvement Initiative (PPII) - Follow-on program activity is being funded in FY 2002 under a new Clean Coal Power Initiative .....	-94,791

### **Distributed Generation Systems**

- Fuel Cells-Advanced Research - The request supports the continuation of generic research on fuel cell systems to lower costs, investigate advanced processes and designs, and to solve fundamental crosscutting materials and design issues .....	-1,794
- Fuel Cells-Fuel Cell Systems - The program will continue to pursue industry cost-shared cost reduction and production improvement research and continues supporting assessments and studies on a market entry system. Activities related to the Solid State Energy Conversion Alliance (SECA) are funded within Fuel Cells-Innovative Systems Concepts .....	-19,432
- Fuel Cells-Vision 21 Hybrids - Research will continue on Vision 21 enabling cost reduction and performance enhancement program on a market entry system .....	-3,467
- Fuel Cells-Innovative Systems Concepts - The increase continues activities leading to development of low cost, solid state fuel cells under SECA .....	+17,233

### **Sequestration R&D**

SUMMARY OF CHANGES - FOSSIL ENERGY RESEARCH AND DEVELOPMENT (Cont'd)

- Sequestration R&D - The increase provides for exploratory research on novel and advanced concepts for greenhouse gas capture, separation, storage and reuse; and increased research facilities and capabilities to expand research in the area of sequestration . . . . .	+1,931
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## SUMMARY OF CHANGES - FOSSIL ENERGY RESEARCH AND DEVELOPMENT (Cont'd)

### **Fuels**

- Transportation Fuels and Chemicals - The decrease in funding is due to the conclusion of the Early Entrance Coproduction Plant feasibility studies and other coal-based syngas fuels research. The funding also provides for continued research on novel syngas ceramic membrane technology for gas conversion and other novel fuels conversion processes ..... -2,558
- Solid Fuels and Feedstocks - Conclude activity for coal cleaning to produce premium fuels, reduction of air toxic precursors, high efficiency processes development, research on advanced separation technologies, and testing to assist in the successful introduction of U.S. coal utilization into international markets. Also provides for continuing research on methods to produce premium carbon products from coal via industry-led consortia and NETL study ..... -2,291
- Advanced Fuels Research - The program will conclude research on C-1 chemistry novel clean fuels, hydrogen enabling science, molecular modeling for fuels catalyst research, and advanced novel concepts research for ultra-clean fuels and chemicals ..... -4,889
- Steelmaking - The elimination of funding will conclude demonstration of this revolutionary ironmaking process ..... -6,685

### **Advanced Research**

- Coal Utilization Science -The funding provides for continued research toward sensor and control development, the Virtual Demonstration Plant and CO<sub>2</sub> mineral sequestration, in support of the Vision 21 concept of a power and fuels complex ..... +14
- Materials - The funding provides for continued program development efforts on high temperature intermetallics, ceramic composites and high temperature filters, membranes, and solid state electrolyte functional materials ..... +15
- Coal Technology Export - The funding provides for continued support for coal and technology export programs and promotion initiatives; assists in trade missions and other activities to promote the export of clean coal technologies; and continues the coordination of all FE international related crosscutting activities ..... -43
- Bioprocessing of Coal - The funding provides for the development of biological processes to sequester CO<sub>2</sub> by natural mitigation strategies and ongoing bioprocessing efforts ..... +3

## SUMMARY OF CHANGES - FOSSIL ENERGY RESEARCH AND DEVELOPMENT (Cont'd)

- Environmental Activities - The program continues environmental analyses of air and water quality, solid waste disposal, toxic substance releases, and global climate change .....	-96
- Technical and Economic Analysis - The funding continues studies supporting multi-year planning, FE strategy, and program formulation, provides analytical support for fossil related Energy Policy Act implementation; supports state and regional efforts to develop energy analysis capability .....	+2
- International Program Support - The program continues analysis, studies and technical evaluations of ongoing and planned bilateral and multilateral activities; and continues support for international initiatives that leverage fossil energy resources .....	-48
- Focus Area for Computational Energy Science - The decrease was due to reprogrammed funds added in FY 2001 to construct access to supercomputer and to purchase interface equipment. Continue development of advanced modeling tools and dynamic simulations for Vision 21 .....	-3,993
- University Coal Research - The funding continues support for university research and undergraduate internship programs .....	+7
- HBCUs, Education and Training - The funding continues efforts to accelerate workforce diversity in fossil fuel related technologies .....	+2

### **Natural Gas Technologies**

- Exploration and Production - The budget request does not include funding for field demonstrations of integrated deep drilling systems. In addition, the Multi-National Lab/Industry partnership effort will be eliminated, and no new work in Secondary Gas Recovery will be pursued. Technology transfer work with PTTC will continue at a reduced level .....	-4,871
- Gas Hydrates - The funding allows continuation of a core program of resource characterization of Arctic and marine hydrates with the U.S. Geological Survey, Naval Research Lab and universities. Funding that supports joint industry projects in seafloor stability, resource characterization and feasibility has been reduced. ....	-5,188
- Infrastructure - The request supports reduced funding for research in the storage technology program to further develop	

## SUMMARY OF CHANGES - FOSSIL ENERGY RESEARCH AND DEVELOPMENT (Cont'd)

existing underground storage facilities; develop cost-effective technologies to determine, prevent or remediate storage well/field deliverability decline; expand peaking storage capability for demand periods; and reduce the investment required to maintain affordable storage service. Also, funding is requested in the infrastructure technology program for research on the environmental impact of pipeline infrastructure and the integrity of distribution systems; underground facility detection; internal inspection; trenchless and horizontal boring technologies; and virtual models for gas system reliability analysis and distribution resource systems . . . . .	-3,060
- Emerging Processing Technology - No new funding is proposed to continue work for coal mine methane and gas upgrading projects . . . . .	-9,896
- Effective Environmental Protection - The decrease reflects reductions in the effort to develop and demonstrate technologies to reduce environmental compliance cost and improve environmental performance related to natural gas resource recovery . The program will sustain emphasis on technologies that will improve responsible development of gas resources on public lands . . . . .	-1,014
<b><u>Oil Technology</u></b>	
- Exploration and Production - The program plans to reduce research on oil basin analysis, smart well technology, advanced recovery methods, and fundamental technologies for frontier oil production. In addition, the Multi-National Lab/Industry partnership effort will be eliminated and research benefitting the recovery of petroleum through the use of sonication will be eliminated . . . . .	-8,494
- Reservoir Life Extension/Management - The request supports the technology research and development with independents program. The decrease reflects completion of work to improve oil recovery and resource management capabilities with Native American tribes . . . . .	-9,813
- Effective Environmental Protection - The decrease reflects reductions in the effort to develop and demonstrate technologies to reduce environmental compliance costs and improve environmental performance related to upstream and downstream oil industry activities . Focus on upstream technologies that will improve responsible development of gas resources on public lands. The Department has chosen, due to budget constraints, to reduce work with States and other Federal agencies in streamlining regulations and supporting their efforts to make more cost-effective, risk-based regulatory decisions . . . . .	-5,496

SUMMARY OF CHANGES - FOSSIL ENERGY RESEARCH AND DEVELOPMENT (Cont'd)

- Emerging Processing Technology Applications - No funds for diesel biodesulfurization project for producing low sulfur diesel fuel. ....	-2,594
- Ultra Clean Fuels - Begin an orderly termination of R&D using prior year funds .....	-9,978

## SUMMARY OF CHANGES - FOSSIL ENERGY RESEARCH AND DEVELOPMENT (Cont'd)

### **Program Direction and Management Support**

- Headquarters Salaries and Benefits - Provides for 80 FTEs at Headquarters. This staff implements and communicates policy to the NETL, sets program objectives, develops program plans and evaluates alternative strategies; develops and defends budget requests; approves procurement plans, and monitors work progress ..... -2,580
- Headquarters Travel - Provides funds for travel in support of the activities stated above. Both domestic and international travel are conducted ..... -38
- Headquarters Contract Services - Provides for contractual services that are generic to the entire FE program. Included are items such as computer services, technical and management support services, E-mail and LAN requirements, computer timesharing/housekeeping, and the working capital fund which provides overhead expenses ..... -265
- Field Salaries and Benefits - Provides funds for 281 FTEs at the National Energy Technology Laboratory (NETL). Activities of the staff include contract and lab monitoring, development and maintenance of project, budget and procurement plans, and other activities related to program and site support ..... -4,917
- Field Travel - Provides funds for travel in support of the above stated activities in the attainment of program goals, both on the domestic front and abroad ..... -140
- Field Contract Services - Provides funds for facility operations, maintenance, finance automated office support service, administrative, management and technical support ..... -4,505

### **Plant and Capital Equipment**

- Construction - The funding provides for general plant projects at the National Energy Technology Laboratory sites and the Albany Research Center ..... -1,891

### **Cooperative Research and Development**

- Cooperative Research and Development - The request eliminates funding for continued research and development at UNDEERC and WRI ..... -8,071



## SUMMARY OF CHANGES - FOSSIL ENERGY RESEARCH AND DEVELOPMENT (Cont'd)

### **Fossil Energy Environmental Restoration**

- CERCLA Remedial Actions - Provides funding for the continued cleanup of the Rock Springs and Hoe Creek sites; continuation of the Hannah site revegetation; soil and groundwater cleanup at the FETC-PGH former liquefaction site; and assessment/site investigations of inactive projects ..... -1,707
- RCRA Remedial Actions - Provides for continued on-site remediation activities ..... +137
- Other ES&H Actions - The increase provides for continuing recurring ES&H activities at the FETC sites ..... +1,092

### **Import/Export Authorization**

- Import/Export Authorization - Provides for the salaries and benefits of 7 FTEs who manage the regulatory review of natural gas imports and exports, exports of electricity, the construction of electric transmission lines which cross U.S. international borders, and exercise regulatory oversight of powerplant conversions pursuant to the Powerplant and Industrial Fuel Use Act of 1978 ..... -1,295

### **Advanced Metallurgical Processes**

- Advanced Metallurgical Processes - Continues research on extending the service life on materials while addressing ways to improve environmental impact of hazardous materials paths and processes ..... -14

### **Use of Prior Year Balances** +107,000

FY 2002 Congressional Budget Request ..... \$449,000